

Figure 82. Top Displacement Components for Square Pile with 0.03 axial load ratio/BP V/Load P1	98
Figure 83. Measured versus Calculated Top Displacement for Square Pile with 0.03 axial load ratio/BP V/Load P1	99
Figure 84. Pile Top Displacement Component Percentages for Square Pile with 0.03 ALR/BP V/Load P1/0.75 in (19 mm) top displacement.....	100
Figure 85. Square Pile/BP V: Cap Moment versus Cap Rotation	100
Figure 86. Square Pile/BP VI: Cap Moment versus Cap Rotation	101
Figure 87. Circular Pile/BP V: Cap Moment versus Cap Rotation	101
Figure 88. Circular Pile/BP VI: Cap Moment versus Cap Rotation	102
Figure 89. HP/BP V: Cap Moment versus Cap Rotation	102
Figure 90. HP/BP VI: Cap Moment versus Cap Rotation	103
Figure 91. Secant Stiffness of Square pile / BP V (pushing direction).....	104
Figure 92. Secant Stiffness of Square pile /BP V (pulling direction).....	104
Figure 93. Secant Stiffness of Square pile / BP VI (pushing direction)	105
Figure 94. Secant Stiffness of Square pile / BP VI (pulling direction).....	105
Figure 95. Secant Stiffness of Circular pile / BP V (pushing direction).....	106
Figure 96. Secant Stiffness of Circular pile/ BP V (pulling direction).....	106
Figure 97. Secant Stiffness of Circular pile/ BP VI (pushing direction)	107
Figure 98. Secant Stiffness of Circular pile / BP VI (pulling direction).....	107
Figure 99. Secant Stiffness of H-pile / BP V (pushing direction)	108
Figure 100. Secant Stiffness of H-pile / BP V (pulling direction).....	108
Figure 101. Secant Stiffness of H-pile/ BP VI (pushing direction)	109
Figure 102. Secant Stiffness of H-pile/ BPVI (pulling direction)	109
Figure 103. Schematic illustration of rotational component of connection joint	112
Figure 104. Theoretical rotational stiffness compared to measured results.....	115
Figure 105. Wake County MultiPier Model with rotational springs	117
Figure 106. Halifax County MultiPier model with rotational springs (after Robinson et al. 2006).	119
Figure 107. Effect of Stiffness Ratio on Wake County Bridge, normalized to fixed and free results from Table 26	121
Figure 108. Stiffness Ratio Effect on Halifax County Bridge, normalized to fixed and free results from Table 27	122
Figure 109. Comparison between Halifax and Wake County Results Normalized to fixed and free heads	122
Figure 110. Determination of k for a column (10 ft long, EI/L = 424776 kip-in, 70 kip lateral load). Point of inflection noted in each case by data point.	124
Figure 111.Moment-Curvature response of drilled-shafts in the Wake County Bridge.	129
Figure 112. Joint Closure Model for 3 spans supported by 2 interior pile bents at the expansion joints (Robinson et al 2006).....	130
Figure 113. Halifax County Bridge Bent Response to Lateral Load.....	133
Figure 115. T-z curves for Limestone (McVay) model.....	138
Figure 116. T-z curves for IGM (Intermediate Geo-Material) model	141
Figure 117. Q-z curves for IGM model	141
Figure 118. Ultimate resistance for Reese's Weak Rock model	143
Figure 119. P-y curves for Reese's Weak Rock model.....	144